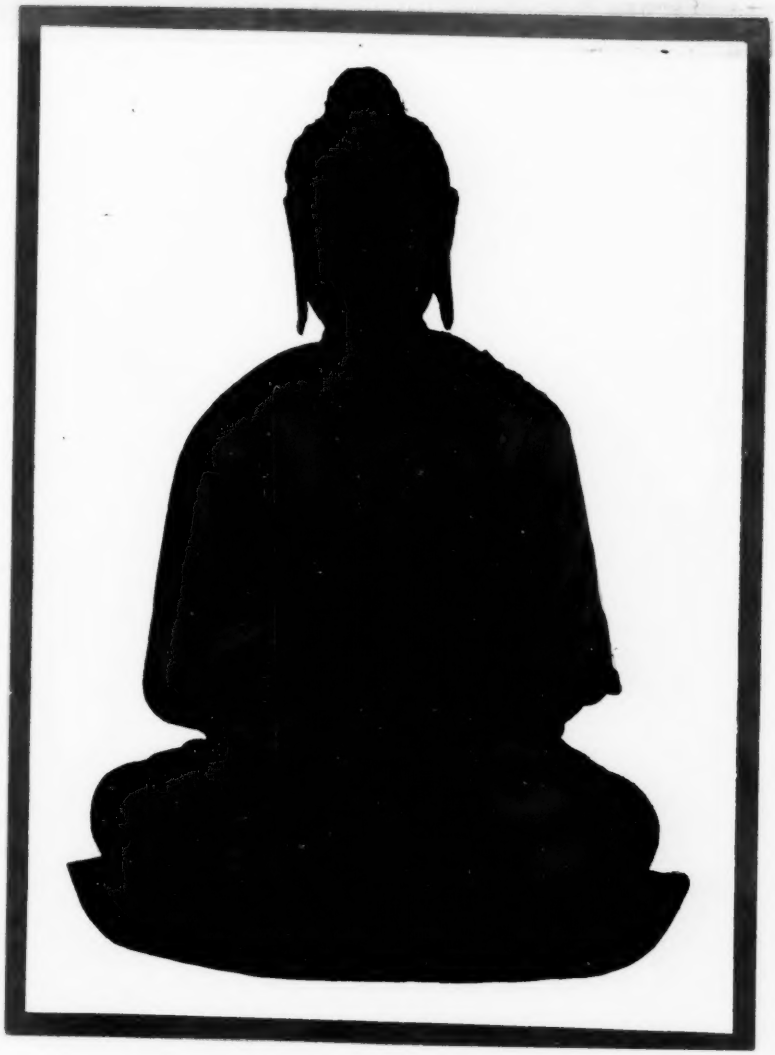
MAIN CURRENTS

IN MODERN THOUGHT



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MAIN CURRENTS IN MODERN THOUGHT

A co-operative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.

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CONTENTS

Buddhism	U Nu	99
Levels of Organization	R. W. Gerard	104
Towards Faith in Reason	F. L. Kunz	109
On the Theory of Knowledge	Albert Einstein	112
Experiments in Integrated Education: A Further Review of the Teaching of Chemistry		114
Source Readings: Integrative Materials and Methods		
The Interrelation of Religion and Psychiatry		115
Physiological Effects of Atmospheric Ionization		116
Progress of Relativity Theory		116
Querying the Cell		117
News and Notes		118
Reviews		119

Cover: Gilt Bronze Buddha, T'ang Dynasty, Chinese, 618-907 A.D.
Courtesy of the Metropolitan Museum of Art

MAIN CURRENTS IN MODERN THOUGHT is published 5 times a year in Sept., Nov., Jan., March, and May, to call attention to significant contributions to learning currently being made by workers in the multiple fields into which knowledge has come to be classified. It relates these advances to each other and to the classical and contemporary views of Eastern, European and American thinkers. It is designed to save time for the reader by providing a vantage-ground from which the whole world of knowledge may be surveyed and kept in proportion as it moves toward integration. Its editors assume that the principles of art, the universals of philosophy, the laws of Nature and Man as formulated by science, and the truths of comparative religion, can be orchestrated into a harmonic, meaningful, ethical body of teachings which can and should be made the central core of curricular study in the educative process at all levels of development. In condensing text, square brackets [ ] indicate editorial interpolation. Three dots . . . in the text indicates a word, phrase or passage omitted in the interest of brevity or clarity. Other usages are standard. $3.00 a year. Foreign $3.50. Contributors to MAIN CURRENTS enjoy full liberty of opinion and expression in these pages. *Copyright 1956, by F. L. Kunz, Port Chester, New York, to whom all communications regarding MAIN CURRENTS IN MODERN THOUGHT should be addressed.* *Entered as second class matter April 13th, 1946, at the post office at Port Chester, New York, under the Act of March 3rd, 1879. (Re-entered as second class matter November 17th, 1953, at the post office at Port Chester, New York, under the Act of March 3rd, 1879.)*

BUDDHISM

U Nu

Prime Minister of Burma

Note: For reasons of space, remarks by Prime Minister U Nu of Burma have been reduced to the main essentials. No words or phrases, however, occur in here except those used by His Excellency.

The original manuscript, which contains interesting details by way of application or illustration of the thought, is reproduced in the booklet, An Asian Speaks. The booklet can be had on request from the Embassy of Burma, 2300 S Street N.W., Washington, D.C.

I think that Buddhism is not properly understood in the West.

Some believe that Buddhism teaches the avoidance of such evil things as taking life, theft, seduction, falsehood, taking liquor and drugs, and so forth. Others understand Buddhism merely as a body of doctrine teaching people to cast off hatred and disseminate love towards all humanity. But these aspects of Buddhism are merely partial. After all, the doctrine of avoidance of evil practices and of love for all living beings appeared at certain periods of human history even before the rise of Buddhism.

Then what is it that distinguishes Buddhism from other religions and other codes of moral and ethical conduct? The answer lies in the practice of Buddhist doctrine, which involves an exercise of rigid personal discipline, so as to attain a serenity of mind, which in turn will lead to a way of escape from suffering.

It is not easy to explain this to those who are not initiated in the teachings of the Buddha. It is particularly difficult to do so in another language, because frequently there are simply no words which can convey the exact and full meaning of certain Buddhist concepts. If you will bear with me, however, I will attempt this difficult task.

What is the essence of Buddhism? In answering this question, let me say that I do not intend to give a detailed discussion of Buddhistic philosophy. I shall attempt merely to give you the essential principles of our religion.

THE first principle of Buddhist philosophy is a belief in an understanding of the thirty-one planes of existence, which may also be called the wheel or cycle of existence.

These thirty-one planes are as follows: (1) Twenty planes of Brahmas (or Higher Spiritual Beings), (2) Six planes of Nats (or Lower Spiritual Beings), (3) Human plane of Existence, and (4) Four Nether planes called Apaya. Apaya comprises Beings-in-Torment, Animal Beings, Beings-in-Woe called Peta, and Beings-in-Semi-Woe, called Asuraka.

You will see from the list that there are twenty-six planes above the plane of human existence, and four planes below. If we take the human plane as our criterion, the beings in the higher planes of existence have much pleasure and enjoyment, whereas the beings in the four lower planes are in pain and torment. If I may borrow terms from other religions, the upper twenty-six planes of spiritual existence are the planes of "paradise," and the four nether planes are the planes of "purgatory."

The second principle of Buddhism is a realization of the following three cardinal facts:

(1) No being born in any of these thirty-one planes of Existence is permanent.

(2) All beings born in any of these thirty-one planes of Existence will be reborn endlessly in one of these planes as a result of their past mental states, utterances and actions.

(3) All beings born in any of these thirty-one planes of Existence are bound to meet, more or less, with suffering and misery, in the form of separation from loved ones, having to live or work together with hateful ones, non-fulfillment and frustration of desires, advancing age, illness, death, and so on.

The third principle is this: Buddhism is a way of life which will lead to complete freedom from all these sufferings.

WHAT then is this way of life?

The Lord Buddha has clearly said that there is but one way which will lead to freedom from suffering. This way is no other than the way of complete aware-

ness. The nature of this awareness will be understood better if one practises contemplation, but I will attempt to explain it in general terms.

All human beings have the same sense organs. One of these is constantly in contact with some kind of sensation. As a result of these sensations we experience, roughly speaking, either a pleasant or an unpleasant reaction. Close on the heels of this sensation, there arises in us a mental state of liking or disliking the sensation. And with this liking or disliking, there arises a mental state of attachment or revulsion.

Pleasant sensations breed attachment, and unpleasant sensations breed revulsion. These mental states of attachment or revulsion recur continuously in us, and just as we cannot see when our eyes are covered with cataracts, so we cannot get a true perception of ourselves when our minds are occupied with either attachment or revulsion. We also fail to get a true perception of the things around us, both animate beings and inanimate objects.

Let us illustrate this point with a personal experience. One night, in my youth, I was walking alone. The wind was blowing rather heavily and a loose zinc sheet in the roof of a building was fluttering. At first I was terribly frightened at the sight of what I thought to be a huge monster rising and bending. I stood still and looked at the phenomenon. After some time, when I had completely recovered from the fright, I realized to my relief that it was not a monster but a loose zinc sheet fluttering in the wind.

In the same way, as we are letting in a free flow of sensations through our sense organs, mental states of either attachment or revulsion are occuring in us every day, every hour, every minute and every second. So long as we allow ourselves to be victims of these states of mind, we will have an incorrect perception of ourselves and of things around us, in the same way as I had the incorrect perception of the fluttering zinc sheet so long as I was overcome with fright.

WHAT is therefore required is the sense of awareness at the first impact of sight, sound, scent, taste, touch and thought. If you apply a sense of awareness, mental states of attachment or revulsion will not occur in you so long as that awareness lasts. An angry man, at the instant application of "awareness" of his anger, will find that his anger subsides. Many have had such an experience of "awareness" at one time or another, but I think there are only a very few people who have attempted to strengthen this ability to be aware.

This awareness of mind can be strengthened if it is continuously applied in the correct manner on all occasions. It will certainly be difficult at first, but a constant application of this awareness to all your senses will preclude the possibility of the encroachment of attachment or revulsion. After a sufficient practice, awareness will become firm and constant. When it becomes "firm and constant,"

(1) you will reach the First Stage of Spiritual Development, called the Sotapatti Magga;

(2) and then, if you continue and persevere with this mental awareness, you will reach the Second Stage, called the Sakadagami Magga;

(3) and then, if you continue and persevere, you will reach the Third Stage, called the Anagami Magga;

(4) and then, if you continue and persevere, you will reach the Fourth Stage, called the Arahatta Magga.

This is the end of the long road of existence, for you will now obtain serenity and tranquillity of mind. From this point onwards, whatever you see, or hear, or smell, or eat, or come in touch with, or think of, there will not arise in you attachment or revulsion. You will no longer have an incorrect perception of yourselves or of all things around you. You will now have the right perspective, and you will see all things in their truth.

WHAT I have said so far is an attempt to answer the question"What is Buddhism?" in the simplest manner possible. But immediately after giving this answer, allow me to tell you a little story about what happened in one of our villages when I was a young boy.

There was a village in my country, where cholera was rampant every year. Every time cholera occurred, the villagers, instead of taking such measures as inoculation, boiling drinking water and clearing the village of rubbish and dirt, would make a great din by beating on tins, brass trays, and all sorts of utensils. This was their custom, because they thought cholera was due to evil and powerful spirits entering the village, and by making a huge noise they thought they were frightening the spirits away.

One day a health officer came to this village and told the villagers that the occurrence of cholera was not due to spirits but to the drinking of impure water containing cholera germs. The villagers were too polite to say anything in the presence of the health officer, but as soon as he went away they all laughed and said to one another, "This official must be crazy; everyone knows that cholera is due to evil and powerful spirits, and he said it is due to germs in the water. How ridiculous! How naive!"

The next year there was again a cholera epidemic. This time the health official brought a microscope to the village. He did not give a long lecture; he asked for a sample of drinking water, and made the villagers look at it through the microscope. Only then, the villagers were surprised and alarmed. They started to drink only boiled water, and from that time onwards there was no cholera in the village.

Just as those villagers, you may laugh and say, "We cannot see those higher planes of Existence of the spiritual beings, or the lower planes of Existence. How ridiculous and naive to believe that we after our death will be endlessly reborn in one or the other

of the Thirty-One Planes of Existence. And there is nothing wonderful in the doctrine that a man can come to the end of the road of existence merely by an application of awareness to all sensations."

In telling you this little story, I do not mean to suggest in any way that the members of this learned audience are ignorant and superstitious as those simple villagers. I merely want to emphasize two points. First, without the right vision, you cannot see the truth; the villagers could see the microbes only through the microscope, and I will say that you can see the truth regarding human existence only through the microscope of "mental serenity." Secondly, truth can be discovered only through personal experience. No amount of explanation could make the villagers understand what a microbe was, and in the same way, no amount of explanation on my part can make you understand exactly what "awareness" is. But a personal experience of mental exercises of contemplation as practiced by Buddhists will open for you rich new fields of vision. Therefore I should like the members of my audience to test whether the doctrine of the dhamma I have outlined is true or not.

The Lord Buddha has said that the dhamma or doctrine of Buddhism has the following six qualities:

(1) It has faultless excellence.

(2) It is not a doctrine that has to be accepted on hearsay, or because someone has said so; it is a doctrine that has to be practiced by oneself to be realized fully.

(3) It produces results without a deferment of time. The truth of the doctrine can be known in this life and the proof need not be postponed to the hereafter.

(4) It has the quality of being able to invite non-believers to prove its truth themselves.

(5) Since it is a doctrine without inconsistencies and other blemishes, it is one which everyone, high or low, can and should follow.

(6) It is not a doctrine that a father can know from his son's practicing of it, or a son can know from his father's practicing of it. It has to be practiced by oneself to be able to realize its truth.

MAN, until and unless he gets insight, is sceptical, whatever religion he professes. Even a devout Buddhist, who has donned the yellow robe from boyhood, after acquiring great learning in Buddhist doctrine, will sometimes be assailed by doubts within him as to the truth of the teaching of Buddhism. But as soon as a person has reached the First Stage of "awareness" or spiritual development called the Sotapatti stage, the characteristic tendency of the human mind to doubt will become completely annihilated. At this stage, he can no longer have doubts regarding the endless chain of suffering, or cause of that endless chain of suffering, or the state of complete freedom from the endless chain of suffering, or the way to achieve a complete escape from the endless chain.

If such a man has been a very bad man before he reaches this first stage of awareness, he will himself recognize and realize a great transformation as soon as he reaches that stage. Other people who know him well will also see the transformation clearly. The reason is that it becomes absolutely impossible for a man who has reached this stage to kill, or to take others' property not given to him, or to seduce or to utter falsehood, or to drink or take drugs. In short, he will never again make evil utterances, perform bad actions, or have bad thoughts.

When the Second Stage is reached the experience is still similar to the First, although of course there is a further development.

But when the Third Stage is reached, a person will have shed revulsion, fear and sexual desire entirely. There will be no one anywhere who can cause the slightest anger, fear and sexual desire to appear in him whatever the provocation. This is indeed a great mental achievement. However, the person at this Third Stage of spiritual development still has one desire remaining in him, namely, to reach the Plane of Existence of the Higher Spiritual Beings.

But, when the Fourth Stage, or Arahatta Magga, is reached, there is no more any anger or desire in him. He has become serene and tranquil.

These are the Four Great Stages that can surely be achieved in this lifetime by those who test and prove the truth of Buddhism. They will not have to wait till after death for the proof. And, even before the First Stage or Sotapatti Magga is reached, a person practicing awareness will experience Eleven Kinds of Mental Realization or Nyanas, so that he will be convinced that he is on the right track.

I will not attempt to explain beyond this the meanings of the various mental states of "awareness." Let those who embark on the spiritual exercises of contemplation find out the truth for themselves. For, however hard I try to explain, the members of my very patient audience will only faintly grasp their significance, whereas after they have completed the course of spiritual exercises they will not need my explanation any more, but will understand these various mental states clearly and fully by themselves.

I know full well that Americans can only be convinced by "scientific proof," that is, by practical experiment and practical demonstration. And owing to this belief in tangible proof, they have made experiments in the field of science, at great expenditure of money and manpower, and have attained such suc-

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[1]The technical names of the Realizations and Nyanas are:
(1) Namarupa Pariccheda Nyana
(2) Paccaya Pariggaha Nyana
(3) Sammasana Nyana
(4) Udayabbaya Nyana
(5) Bhanga Nyana
(6) Bhaya Nyana
(7) Adinava Nyana
(8) Nibbida Nyana
(9) Muncitukamya Nyana
(10) Patisankha Nyana, and
(11) Sankha-rupekkha Nyana

cess that the world stands astounded at their scientific achievements. Therefore, I earnestly plead with the people of the United States of America, through this distinguished and representative audience, to put the truth of Buddhism to the test, in the same way as a scientific theory is put to the test.

THE following information will be of great use to those who desire to put the truth of Buddhism to the test.

The person intending to meditate should be moderate in eating while practicing meditation, but he can take any kind of food he likes. Continuity is the most important factor in the practice of meditation. While meditating he can adopt a comfortable posture, either sitting down on the floor or on a chair. He can meditate while walking up and down a stretch of floor or ground. In meditation the kind of food and the kind of posture are not the vital factors. Only constant application of the sense of awareness is vital.

If constant application of the sense of awareness is most essential, how should one apply the sense of awareness? When a person breathes he will observe that the nostrils sense the inhaled or exhaled air. He must note that it is inhaled or exhaled. While applying this sense of awareness to breathing, if he hears or sees or tastes or feels or thinks of something, his sense of awareness is likely to be interrupted. He must cultivate the habit of becoming aware of the fact as soon as his sense of awareness has been cut off.

If, for instance, while he is applying his sense of awareness to his breathing process, he sees a certain object, then he should apply his sense of awareness, as quickly as possible, to the impact of sight. He should note that he is "seeing." When thus the sense of awareness is applied, then he can switch back to his original application of sense of awareness to breathing. If there is movement of any part of the body, such movement is to be carefully noted and the sense of awareness is to be applied to it.

Take, for instance, the eating of a meal. As soon as the food is seen, the sense of awareness is to be applied to the impact of sight. It is to be applied to all bodily movements while eating the meal. In the process of walking, too, the mind must be made aware of the right foot being advanced, or the left foot being advanced. There must be a sense of awareness of each step.

In the case of some people, it is found that they find it difficult to apply the sense of awareness to the inhalation or exhalation of breath. Such people can apply the sense of awareness to the rising or falling of the abdomen (or the diaphragm) when breathing. Some people may find it difficult to apply the sense of awareness either to the inhalation and exhalation of breath, or to the rising or falling of the abdomen. Such people should sit on a chair, and apply the sense of awareness to the fact that they are sitting, continually noting that their flesh is touching the chair.

If one sometimes finds it difficult to apply the sense of awareness, one should think of one's growing age and ultimate death. It effectively helps in checking the perpetually wandering mind. After the first few days, however, the process of noting becomes easier. As soon as the awareness of mind is strengthened, every time perception of objects occurs there will follow a close application of the sense of awareness.

When the First Stage of Spiritual Development, called the Sotapatti Magga, is reached, the person will experience the Entering Into the Phala-Samapatti, or the Attainment of the Trance of Supermundane Consciousness. While in this trance, the person is oblivious of the world and of himself. While practicing the spiritual exercises of meditation, it has been necessary to make a special effort to obtain constant awareness of mind. But the sense of awareness is automatically present and constant in this peaceful and supermundane state of consciousness. In other words, it is a state of tranquillity approaching the peace and blessedness of Nirvana.

WHY is it necessary to apply the sense of awareness constantly?

In any being, there are factors, body and mind. From a superficial point of view, it seems that it is the same body and the same mind throughout one's life, from birth to death. In reality, the body and the mind undergo a continuous process of destruction even within the duration of a brief moment. It is only because the renewal processes of the body and the mind are as swift as the destructive processes that the body and the mind appear to be the same throughout life.

To give an illustration of this apparent continuity, take the electric light. The first spark or glow of light disappears almost immediately after the current is switched on, but successive sparks produced by the turning of the dynamo bring about the appearance of a single, continuous light.

The destruction (or disappearance) and the renewed formation of the mind are immeasurably swifter than the rate of revolution of the dynamo. And these conscious-moments (known as the mind), which occur and disappear a hundred thousand billion times in the duration of a lightning flash, are continuously receiving the impact of external sensations through the sense organs.

As soon as the contact between the mind and these sensations occurs, there arises a mind-defiling (Kilesa) emotion or passion such as love, pity, infatuation, hatred, anger, jealousy, etc. These passions enfold all beings from birth to death, and thus prevent their seeing the truth. To prevent the mind-defiling passions from arising, the conscious-moments (the mind)

(1) will have to be restrained from freely receiving the impact of external sensations, and be directed en-

tirely to the single impact of a confined point of perception. The mind, in other words, is not to be left to play about freely. It should be channelized, so as to anchor it to one definite perception.

(2) While thus anchoring the mind, the sense of awareness must be closely applied so that no defiling emotion or passion or thought will penetrate the defensive wall of awareness.

The mind is capable of entertaining only one mental state at any single moment. But, as mentioned above, since the consciousness-moments arise and disappear a hundred thousand billion times in the duration of a flash of lightning, there can arise countless consciousness-moments. Therefore, while the sense of awareness is being applied, if there should be a lapse of even a tenth of a second, the mind will instantly be open to the impact of other sensations, and a mind-defiling thought or passion can arise.

Since such is the case,

(1) directing the mental faculty to a single definite perception and anchoring the mind to that single sensation, and

(2) applying the sense of awareness to every impact of sight, sound, smell, taste, touch, thought, and movement, are due to the need to prevent mind-defiling thoughts and passions from following closely upon the heels of the swift occurrences of consciousness-moments.

THIS constant application of awareness produces other important results. Since sensations we receive during the application of awareness are devoid of defiling passions and thoughts, they produce none when these sensations are recalled. Another more important result is that the impermanent nature of the universe, the utter absence of attractions that can make one hanker after life, and the disappearance of delusion that makes one blind to the simple working of cause and effect are progressively grasped.

Insofar as these mind-defiling passions and thoughts can be prevented from arising and the mind made pure, the person practicing the application of the sense of awareness will experience the Mental Realizations of Nyanas stage by stage, and then will attain the Sotapatti Magga, or the First Stage of Spiritual Development. As soon as this is attained, the ultimate goal, Nirvana, can be clearly comprehended.

It is not necessary, in these spiritual exercises, to have extraordinary powers of memory or high intellectual ability. Only the following are needed:

(1) Conviction: The person should be convinced that the Higher Stages of Development leading to Nirvana can be attained by practicing according to the methods indicated. Without such conviction, he will not put forth earnest endeavor, and without earnest endeavor nothing whatsoever will succeed.

(2) Health,

(3) Intellectual integrity,

(4) Earnest and constant endeavor.

THE Truth is inherent in every being. But it is not seen and realized because it is covered over with and hidden by mind-defiling passions and thoughts. Without getting rid of the mind-defilment, to try to seek the Truth through mere reasoning or human intellectual power will lead to failure. Truth cannot be found in this way.

There is one more question which needs to be answered, though briefly.

Will the Truth become automatically apparent by merely applying the sense of awareness so that the mind-defiling passions or thoughts are prevented from arising? Or is the Truth to be sought in a further stage, only after the sense of awareness is strengthened and made firm, so that this strengthened awareness of mind can be used as a means of finding the Truth?

The answer is this: The person practicing the spiritual exercises does not need to search for anything. Some persons, who practice the spiritual exercises, are sometimes found to have been kept away from the first stage, i.e., the Sotapatti Magga, for an unnecessarily long time, simply because of their search for Truth. They always forget the simple fact that in their search for Truth, that wall of awareness is broken off. When that wall is broken off, all kinds of sensations which will produce all kinds of defiling passions and thoughts are let in. Therefore what is really important for the person practicing the spiritual exercises is definitely not the search for truth but the ability to build a massive wall of awareness. The Buddha has said that a person could see the Truth if he acquired the necessary strength of awareness. If what is essential is the ability to search for Truth, and not the ability to build a massive wall of awareness, Nirvana, which is the goal, will be for only a handful of people who have the ability to search for Truth and not all who wish to discover Truth. Nirvana is for all.

WHEN a person acquires the necessary strength of awareness, the impermanent nature of mind and body, the utter absence of attractions that can make one hanker after life, the disappearance of the delusion that makes one blind to the simple working of cause and effect, thereby giving one all kinds of wrong notions about oneself and the universe, which have been the objects of the application of the sense of awareness, will by themselves become apparent and comprehensible. With the constant sense of awareness, true knowledge will come by itself, and will not have to be looked for.

This will be a definite personal experience. Nothing is to be accepted from hearsay. Everything must be experienced personally. The truth can be experienced in this lifetime, and therefore one should endeavor earnestly.

The drawing of the Buddha which accompanies this article is by Clay Lancaster.

LEVELS OF ORGANIZATION*

R. W. Gerard

Center for Advanced Study in the Behavioral Sciences**

Some Applications of Biological Concepts to Social Science

MANY people have grave doubts as to the validity or the usefulness of making systematic correlations from the area of the natural sciences to that of the social sciences, and this deserves comment, for there is some justification for the doubt.

Therefore I offer the statement that understanding, including even a considerable amount of perception, is analogy and nothing more. When the analogy has become sufficiently precise, or when its essential parts have been separated out and clarified, then they become the tautologies of mathematics and logic. We face the new or strange, and come to feel at home with it, by equating it with something with which we are familiar. As Tyndall reported of the Bavarian farmers when they saw their first locomotive, they gaped and gaped and finally resolved the problem of this horseless vehicle by concluding, "There must be horses inside." Psychologically we have thought of mental processes in terms of sensory processes, vision notably, as with imagery and image, or insight and sight. For this is the analogy that first began to mean something to people concerned with the phenomenon. I therefore suggest that there is real value in efforts to work across the board, to homologize (to utilize a technical biological term), and I would like to exemplify some of these advantages.

The first is merely in the attitude toward one's subject. It is well known that academic scientists with industrial attachments are more inclined to find patentable items in the course of their research than are those not so oriented. This is no value judgement, just a recognition that one finds what he seeks. The kind of questions one is likely to ask about his universe of interest will be different if his orientation has been shifted by awareness of wider categories.

Secondly, if one *can* see legitimate relationships, then, to the extent that these are valid, there may be found in some other area a considerable volume of analysis, even of information, which can be applied to the problem area. The equations of flow of fluids, picked up from one area of physics and applied to the newer fields of heat and electricity, the increase of population of cells and of men, along like curves, and so on, are examples.

There is, third, the advantage of progressive generalization. Numbers are mighty useful, but they are still only a special kind of set. With this more generalized concept, one can deal with things beyond the scope of numeration, with attendant increase in understanding and power.

The fourth and most important aspect has to do with prediction. Society is interested in supporting our little games not because we enjoy playing them but because they expect something to come out of them. Even at the level of the Nobel prize the practical is often weighted heavily over the theoretical or the analytical. In any event, we do have to face the problem of prediction and control; even when one builds a machine to do a certain thing he is predicting that if he puts certain elements together in a particular way the resulting complex will work in such and such a way.

I would like to give some instances of biological thinking applied to the social realm. From my own experience, I can assure you that examining social systems from the vantage point of biology has led to fresh insights. For example, reasoning from the breakdown of the gradients of dominance when a flatworm gets too long, and the resultant start of a new individual at the unsubordinate tail end, I "predicted" the phenomenon of anomie. Later introduced to Durkheim's work, I found that this result, if not new, was at least correct. Another conclusion I reached is that the evolution of social systems, as of biological systems, would necessarily be in the direction of greater integration and cohesion of tighter and larger units. The evidence for this has been published at length; a smaller, more concrete and perhaps, therefore, more testable prediction from biological evolution concerns not the overall sweep of social evolution but its rate and pattern, drawing rather heavily on the work of Sewall Wright.

*Condensed by E. B. Sellon from an address (Oct. 1954). Some of the suggestions concerning language evolution have since been explained (Behavioral Science, 1, 1, 1956).

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An interbreeding population, more or less corresponding to a species or subspecies, can be looked upon as a time-space manifold of connected points or events (fig. 1). Each node would be a particular individual, connected above to ancestors and below to descendants. The net is not regular—two parents may have many children or none—but by and large the net moves forward through time in a consistent manner. Now the net is not really one of individuals but of genes or gene-assemblies. The genes that go on in

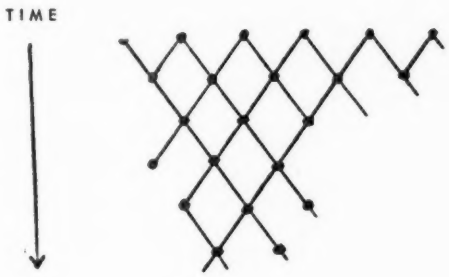

Fig. 1

the next generation are formed by division of the original ones. Thus we can think of the individuals as nodes in which gene assemblies mass in time, somewhat as physicists can think of matter as nodes in an energetic field, and certainly as one can think of individuals as nodes in a communication field. Interest comes to focus more on the connections in the network than on the individuals.

There are two extreme states in which such a pattern could exist; the essential homogeneity of a random net, or, at the other extreme, a complete isolation of one part of the net from another, which would mean not one population but two or many. All gradations between these are possible.

THE concept of the degree to which a system is sub-grouped into isolated cells is so important that I would like to introduce a new term and speak of this as "cellulation." I also suggest the notion of a cellulation index, which might run from zero, for a completely random homogeneous net, to one, for a population divided into completely isolated sub-sets. Wright (who uses two constants) has shown that, with too complete isolation of the sub-groups, evolution is likely to be slow, or die out entirely and, if groups do evolve, they do so rather independently. If, on the other hand, the homogeneity is too great, evolution becomes very sluggish and may wander in bizarre directions. The optimum for moving the whole population forward is a considerable degree of cellulation, near to half rather than to zero or one. Moreover, this moderately cellulated population not only evolves most smoothly and adaptively but, when a new ecological space is made available, it is most able to radiate rapidly to occupy it. Thus, when some important new genetic change appears, as warm-bloodedness that opens colder regions, or a covered egg that will survive on land, or even when an emerging land bridge or retreating ice makes a new area available, the moderately cellulated population deploys rapidly in a burst of new species.

Consider now this basic network and think of a new element coming into it, an idea, or a phoneme in language, or even some particular artifact. The element passes from sender to receiver and separate elements can form varied combinations. With a simple collection of non-interacting entities, as an assembly of a hundred genes in a haploid organism, a change at each locus makes possible just a hundred mutations and a hundred different types. In the diploid situation, with pairs of chromosomes able to rearrange and cross during mitosis, a similar array of mutations would give 2^{100} variations; and with new ideas able to interact in considerable numbers the combinations possible are likewise prodigious. The enormously greater pace of social evolution must be related to the different conditions of origin, spread, interaction, and selection of ideas as compared with genes. Also, since new knowledge represents an added idea or fact which can interact with existing ones in a manifold of almost unlimited dimensions, there is no finite limit to the material for scientific investigation. Every so often a theoretical insight reveals a clear functional relationship which collapses many elements and empirical relations into a simple understanding, but the peripheral growth is ever ahead of the inner ordering.

I shall, then, make some "predictions" about social evolution. If my words are false this will mean that I have a wrong or an inadequate hypothesis or have not taken into account perturbating factors, but at least the biological picture does permit definite expectations. Social evolution also should be most rapid where moderate cellulation is present, new civilizations and cultures should have arisen in human groups subjected to partial isolation, with communication difficult but not impossible. Geographically, this could be in mountainous areas, in archipelagoes, in a maritime people. Most of the races of man are supposed to have originated in mountainous regions, and the suggestion has been that this is because they are there exposed to a high concentration of cosmic rays which produce gene mutations. This explanation has been disputed; in any event, another explanation would be the existence of a moderately cellulated interbreeding group. The archipelago of Greece blossomed culturally, as did maritime Crete, Venice, and England. Perhaps I am merely selecting favorable cases, as Toynbee has been accused of doing; a student of culture should be able to judge the general validity of this approach. Further, cellulation can occur on other than geographic grounds — between communities, religious or racial groups, classes and castes, and the like; and the relation between such social structuring and the rate of change of cus-

tom, the appearance of ideas and inventions and social roles, should be examined.

I could make a similar prediction about language. Whatever the criteria of language evolution may be, there must be some evolutionary hierarchy because we speak of more or less close relations between languages and of the distribution of the dialects between different racial or community groups. The more developed ones should be associated with appropriately cellulated cultures.

One last thing about prediction. It is extraordinarily more difficult to predict up-scale than down-scale; sometimes, perhaps, impossible. But this does not mean that it can not be extremely useful to go from one level to another. Let me remind you of a few instances, such as Darwin's theory of natural selection, built upon Malthus' insight from a sociological observation of population growth. Again, in the behavioral science group at Chicago, Marshak recently developed his thinking about the value of information in decision making, considering when getting information is worth the expense. One of the biologists promptly showed in terms of utility theory (what is factually so) that the more an animal gets around, the more important is information about the environment and therefore the more metabolic energy is it worth while to spend in maintaining a brain to handle that additional information. As a last example, self-regulating systems abound in organisms, electronic mechanisms, political systems, and what not. The useful notion of self-regulation or negative feedback stems in biology from Claude Bernard's *milieu interieur*, given recent elaboration by Walter Cannon under the name homeostasis; and in physics from Clerk Maxwell's machine governors, now blossomed in servomechanism technology. Biologists and engineers have established fruitful barter of ideas and facts in this domain, and social scientists are crashing the marketplace—sometimes with peculiar notions of the commodities.

SO much for what is really introduction: the gist of "Levels of Organization" remains to be said. First let me introduce the word "org," which I coined for the second of the two distinct meanings of organism: one a plant or animal, and the other a kind of system, an entity with many interacting subordinate units. As first conceived, the units are material entities, not functions, so perhaps "org" would not include the kind of system of interacting variables that economists like; certainly it would not include systems of non-interacting units. Crowds, assemblies, collections, do not become "orgs" merely by virtue of spatial juxtaposition; there must be some active interplay of the individual components.

According to this definition, a molecule is an org, with electrons and nuclear particles as its interacting subordinate units. Molecules can form crystals, a higher level org; solid masses can form mountains, an earth, a solar system, and a galaxy. Each would be an org in which the preceding one, itself an org, has become a unit. The complexity of the living introduces more meaningful levels—molecule, chromosome, cell, tissue, organ, multicellular individual, family and other primary small groups, secondary groups, as the community or professional group, town, nation, species, ultimately the whole inter-breeding population, and the entire biota of the world. Each is an org and, as indicated, if it becomes a unit in a larger one, a new level is superposed.

If it is valid to characterize orgs thus generally, in terms of interacting units, then the essential interest is in the units involved and in their relationships. It is of the utmost importance to identify the meaningful units, but this may be difficult. In the biological world, the units presented by anatomy (or God) have proved to be useful even though it is often desirable to use a different kind, functional rather than structural. In the case of social science, considerable attention is now being devoted as to the appropriate en-

Table I

	Molar Properties \ Entities*	Cell	Molecule	Organism	Group	Society or Biota
Stability (Being)	Structure					
	Equilibrium					
Change (Becoming)	History					
	Response					

*Non-material entities: vibrations, phonemes, rules, institutions, roles, goals, etc.

tities. The network is one of ideas, facts, sounds, and so on, which essentially constitute the culture; and whether such things reside temporarily in a human being or in a library or record collection may really make very little difference.

Now let us look at the kinds of relations that can exist between units. A table with levels on one axis—individual, small or large group—and kinds of behavior or relations on the other, may be instructive. Table I shows molar or macro relations, classified as stability or being, structure and equilibrium, and change or becoming, history, (growth, evolution) and response (to disturbance). The squares have a certain relevance to one another and help point up areas that might easily be overlooked.

A full statement of such relations might suffice to characterize rigorously the structure of an org, its cellulation index, degree of integration, and the like.

As mentioned, they also differ in integration. The degree of integration of an org is that of the top level. Highly integrated units could be present in a poorly integrated org; although societies are made of men, perhaps the most highly integrated orgs at the individual level, most of our societies are the equivalent of the flatworm or sponge stage, on the biological scale.

Now what do I mean by integration? The more the integration, the greater is the differentiation of the units composing it; the more the interaction between them and their interdependence; the sharper

Table II

Micro relations (of elements *A* and *B*)

(Nearly all relations have both plus and minus aspects)

Spatial	direction, distance, (containment)
Temporal	sequence, movement, change
Logical	implies, negates, combines with, alternative to
Existential	generates, destroys, imagines, spends, have common descent
*Operational**	attracts, loves, controls, signals to, judges, interprets, studies, guesses about, (imagines)
*Hierarchical***	dominates (more than), prefers, are transitive, are symmetric

*(This category may need extensive subdivision)

**(Relating two elements in the coordinates of a larger set. Relations over more than two elements, besides hierarchical, are still needed)

Turning from relationships at the molar level, involving properties of the system or org as a whole, to the micro level of unit relations, a considerable set of possible relationships exists between individual *A* and individual *B*. I suggest six major categories: spatial, temporal, logical, existential, operational, and hierarchical. In most, if not all, cases the relation is dichotomous, so to speak, with a plus and minus or a good and bad aspect, pairs of antinyms occurring regularly. Specific relations are shown in Table II. I am uncertain whether "contains," "imagines," and one or two others are properly assigned (or analyzed), but the general allotment seems clear enough. The hierarchical relations are indicated only for two elements and their positions in the whole set.

the boundary of the org; the more powerful its buffer or homeostatic mechanisms; the stronger the influences of the whole on the units relative to those of the units on the whole; the greater the cohesion. I suspect the notion of cohesion is used very similiarly for biological and social systems. In my view it is extremely important and needs analysis and clarification. For example, in what ways is cohesion equivalent to attraction, cooperation, love, altruism, and related terms?

This leads to values. I cannot see any basis for absolute values, but this kind of a syllogism seems sound: if survival is a basic value, then altruism is also a necessary value, because the facts of biological evolution show that whenever there has been an in-

crease in cooperation it has favored survival. There is need for measure and indices of altruism or integration, at each level of complexity. Measurement on the number of craft groups in communities of different size and presumed advancement is relevant, as is measurement of gestures of people of a foreign group imbedded in a local American group. Finally, I offer an altruism index, reflecting semi-seriously the culture at the Center for Advanced Study in the Behavioral Sciences.

The altruism index is the ratio of the average satisfactions, (prestige, power, kindness) otbained by persons in a given population from giving money away, to those from spending it personally. That index could be measured by such indicators as the fraction of the total income given to charity as a function of the total income, given the prevailing income tax structure. Of course the residual purchasing power must play a role and other complications will enter; but the predictions are readily quantified and tested. The point is that so vague and value-tinged a notion as altruism of a group can reasonably be tied to a precise formula and tested by quantitative operations.

THE above statements are valid for all orgs, perhaps for systems in general. The remaining exposition must be very condensed.* A subclass of orgs, those ordinarily called living, I have called animorgs. The criteria of this subclass are multiple and rather powerful. First, they are highly complex orgs whose units are complex orgs and so on for many removes. Second, all four types of mechanisms possible in material orgs are actually operating: mechanical; transportative, the movement of something, from one place to another; transmissive, communication by messages of some kind, in which information rather than energy is important; and the hierarchical relation of dominance and subordination, a mixture of the others. Third is the behavior manifested: dynamic equilibrium, the ability to maintain essential constancy as an open system; specific synthesis, the ability to create more of the substances and patterns which characterize it; and adaptive amplification, the ability to respond to a disturbance from the environment, so as to relieve the disturbance and restore the status quo ante. All eight of these criteria are true for all animorgs, including epiorganisms.

There are several kinds of animorgs: the individual cell, even the individual gene, the multicellular individual, and the multi-individual or epiorganism, which includes the social group: the ant hill, the wolf pack, the coral reef. Concerning human societies, since all the criteria of animorgs are fulfilled by societies, it seems a reasonable expectation that they would evolve in ways comparable to organisms. The simpler multicellulars, like sponges, survive complete disruption; the more evolved and integrated ones are crippled by relatively minor damage. So for nomad hunters versus a modern city. The sponges have an open circulation of sea water and no nervous system. Evolution has produced an ever more elaborate circulation and nervous system which yields incomparably richer sensitivity and behavior, also with high survival value. So for modern transportation and communication compared with primitive runners. To me, viewing culture as the internal environment of the epiorganism is highly illuminating.

Most of the quarrels over the nature of man have resulted because the various philosophies have been too polar. Some have insisted that man is only an individual and some that man is only a unit in a group. He is an individual, and as an individual is likely to be in competition with all his fellows; but man is *also* a unit in an epiorganism, and as such he is overwhelmingly in cooperation with his fellows. Moreover, I am satisfied from the evidence that there is a progressive evolution of togetherness or altruism in the epiorganism as in the other levels of animorgs. Finally, I like to think of science (and by science I mean the rational use of the intellect in checking empirical findings and theoretical constructs) of collective, cumulative, reliable knowledge, as the great autocatalyst of evolution which is accelerating human evolution. Perhaps an explosion will result, but I have great hope that science applied at the behavioral level will turn potentially great evil into realized great good.

*For further exposition, see my writings, "Organism, Society and Science," *Sci. Monthly,* 50: 340-50, 403-12, 530-35, 1940. "A Biological Basis for Ethics," *Philos. Sci.* 9: 92-120, 1942. "Higher Levels of Integration," *Science,* 95: 309-13, 1942. "A Biologist's View of Society," *Common Cause,* 3: 630-38, 1950. "The Organismic View of Society," *Chicago Behavioral Science Publications,* Univ. of Chicago Press, 1953.

TOWARDS FAITH IN REASON

F. L. Kunz

Foundation for Integrated Education

The Role of Research in Relating Nature's Laws to Human Institutions

IF freedom is to survive and grow in our disrupted times, there must be a re-birth of faith: not the blind faith based on fear and authority, but a reasonable faith based on a sense of inner balance and integrity, and upon specific and shared knowledge.

Faith in reason . . .

We urgently need a reasonable faith . . .

. . . in the human ability to reason

. . . in our ability to reason *together,* and thus to solve shared problems through the use of tested concepts and principles

. . . in ourselves, and in the interrelatedness of man and the universe

. . . in the principles of self-government which emerge from human ability to relate the lawful order of nature to the structure of our own life.

and in man's ability to know

A clear understanding of the logical processes of science and their place in the human situation makes it possible to build the kind of educational system necessary to establish this reasonable faith. Scientific method, as recently evolved, is of wider applicability than the mechanistic-materialistic approach of an earlier day. The sweep of its deductive-exact procedures, in contradistinction to the inductive and fact-finding mood of the last century, is being extended to the field of human affairs, since it is becoming increasingly possible to demonstrate its effectiveness through empirical tests. By this method we can establish the indispensable function of principles, including those of self-government, and the ability of the human mind to arrive at knowledge acceptable to all reasonable men.

Natural law as the basis of freedom

FREEDOM is a function of natural law.

Natural law can be discovered by the human mind operating in accordance with the methods of science, starting with explicit postulates, deducing and structuring a system, then deriving and testing particulars with exact modern tools.

The human mind operating inductively, by surveying and classifying facts, can arrive at important knowledge, but the certainty of that knowledge will be limited. Induction can produce nothing more than correlations of data and inferences.

These correlations and inferences are not adequate to serve as the basis for the valid public consensus upon which the possibility of a free society depends. Only rational, proved principles can serve that function.

The problem of cognition

Just how human genuis hit upon the postulates which prove successful remains, at present, obscure, despite the attempts of many to explain the psychology of discovery.

What we deem urgent and promising is to concentrate sharply, though perhaps not exclusively, upon the established method which leads to understanding of natural law, and hence provides the minimum foundations of knowledge for freedom.

The deductive method of science

THE principal peculiarity of science at its best is to function as an organizational principle.

It starts from axioms which appeal to the mind by their simplicity, elegance, or perfection. It demonstrates, among other things, the reality of the non-material. By linking ideas with careful experimentation, it strikes a balance between reason and fact.

Science therefore constitutes, as method and content, a body of tested public truths.

This kind of exact science has been known for centuries. Its principal successes began in the Renaissance. In our era it triumphed in the sciences of matter and energy.

Because of the recent successes of physics and chemistry, it has now become possible to restore confidence in natural law, and in freedom which resides therein.

The first step in this restoration is research. The supporting, clarifying material must be pulled out of the specialized treatises in these sciences, and made available for those working in other fields.

The lag in the life sciences

IT must be remembered that scientific postulates or axioms, when fully verified, are built into our working knowledge the way the steel structure is built into a skyscraper. This is contrary to the belief of logical positivists, who hold that these postulates are mere temporary scaffolding.

Besides the fact that this prodigious body of new, tested knowledge has not been made available to the layman in all of its beauty and order, this form of science, indispensable to freedom, has not yet been extended fully into the sciences of life.

This means that basic research must be done in biology as part of a general advance of the same kind in the fields of psychology, sociology, and all other disciplines dealing with man and his social forms.

The consonance of religion and science

WITHOUT abandoning the scientific approach, it has now become possible to see that clear and remarkable connections exist between science and our inherited cultures. By whatever means the founders of the great religions, great artists and seers got at the truth, it now turns out that their insights are much more consistent with the principles arrived at through modern science than is commonly believed.

Science as culture

The exact sciences now sustain what the truly essential elements of our inherited cultures have long proclaimed, namely, that the universe is fundamentally orderly, and that it is possible for human beings to understand that order. Because of this support, it is now possible to work out a philosophy that is an open, testable public domain. Such a philosophy will confirm freedom as both a spiritual and a scientific necessity.

AS the research and the educational work begin to take shape, free men the world over will be united in valid concourse of thought. It seems certain that this work will be received with acclamation throughout the free Orient.

In due time, the results of this work might constitute the science-based alternative to the materialism and mechanism of the 19th century, from which the 20th century systems of autocratic power are derived.

Democracy based on natural law

The Founding Fathers of our nation believed that self-government was possible because they had faith in a natural law that all men could know. They called these basic principles "self-evident."

These principles are no longer self-evident to our generation, whose concepts are still warped by the materialistic science of the 19th century.

The successes of science in the 20th century have made it possible to re-establish in the mind of each citizen a reasonable faith in the basic principles upon which our nation was founded.

The task of undergirding with scientifically-based knowledge the principles vital to freedom is of the highest priority in this day, when the self-regulating order of free men is faced by the world-wide challenge of materialistic systems. Within our own free society, this knowledge is vital, if the vacuum left by the crumbling paternalistic structure is not to be filled by some new authoritarianism.

SCIENTISTS and educators and business men are greatly concerned about the over-specialization of knowledge.

The problem of specialization

The growing ranks of over-trained specialists, inarticulate and uninformed outside their own field, and unable to relate their work to the greater demands of science or to the needs of our generation, reveal one of education's severest deficiencies.

Our system of public education is intended to support free government.

The educational system is thus called upon to establish in the mind and spirit of each student a reasonable faith in the principles upon which our nation was founded.

The aims of education

Our schools and colleges, to accomplish this aim, will have to put the study of natural law in a central place in the curriculum. And natural law must be seen as an integral part of an overarching philosophy that provides harmony for the whole process of inquiry.

NONE of these are new problems. The possibility of answering them is new. In the early nineteen-twenties, deductive-exact science had not won a conclusive victory. In the nineteen-thirties, those decisive successes had been won, but they were buried in the technical journals. In the nineteen forties the case could have been made, but science teachers did not make it, and, as a result, the attempt to solve these problems took the form of "general education," which is mostly an inductive survey of facts.

A publicly defendable philosophy of freedom

In consequence of the failure to seize the opportunity, a variety of groups today attempt to get at principles by arbitrating opinion among themselves. Not one of these groups has attempted to search out and to state the whole body of deductive science and display the meaning of its method and its successes. Yet every step in such a process can be conveyed to the educated layman.

Such knowledge can incorporate science into the living fabric of our society, forming the hard core of workable principle which can be taught everywhere and thus can become the basis of a publicly defendable philosophy. This is now desperately required by free men the world over.

WE are spending millions of dollars each year on research which has demonstrated its ability to produce, on the one hand, usable pieces of knowledge, and, on the other, confusion and the lack of a common ethic to guide our everyday living.

It is time we began to concentrate our energy and attention on that part of moral law which can be shown to be an expression of the lawful order of nature. Such an ethic can become the firm, undebatable and universally acceptable starting point for public discourse. This connection between natural and moral law provides clinching reason why it is time to spend some research dollars to develop the full implications of modern science.

Demonstrable moral law

To all intents and purposes, the knowledge described in the foregoing is already available. Further, it is new knowledge in the sense that it has not been put into general circulation in our system because it lies scattered and buried in specialized branches of science and philosophy.

This knowledge can act as a catalytic agent to help close the cultural lag between the 19th century concepts which are still being taught in our schools, and the far different point of view arising from 20th century science. When organized and conveyed in lay language, its impact is bound to produce the renaissance for which the educational world is waiting.

ON THE THEORY OF KNOWLEDGE*

Albert Einstein

The Enlarged Role of Pure Thought in Recent Science

IN the evolution of philosophic thought through the centuries the following question has played a major role: what knowledge is pure thought able to supply independently of sense perception? Is there any such knowledge? If not, what precisely is the relation between our knowledge and the raw material furnished by sense impressions? An almost boundless chaos of philosophical opinions corresponds to these questions and to a few others intimately connected with them. Nevertheless there is visible in this process of relatively fruitless but heroic endeavors a systematic trend of development, namely, an increasing skepticism concerning every attempt by means of pure thought to learn something about the "objective world," about the world of "things" in contrast to the world of mere "concepts and ideas." Be it said parenthetically that, just as on the part of a real philosopher, quotation marks are used here to introduce an illegitimate concept, which the reader is asked to permit for the moment, although the concept is suspect in the eyes of the philosophical police.

During philosophy's childhood it was rather generally believed that it is possible to find everything which can be known by means of mere reflections. It was an illusion which anyone can easily understand if, for a moment, he dismisses what he has learned from later philosophy and from natural science; he will not be surprised to find that Plato ascribed a higher reality to "ideas" than to empirically experienceable things. Even in Spinoza and as late as in Hegel this prejudice was the vitalizing force which seems still to have played the major role. Someone, indeed, might even raise the question whether, without something of this illusion, anything really great can be achieved in the realm of philosophic thought —but we do not wish to ask this question.

This more aristocratic illusion concerning the unlimited penetrative power of thought has as its counterpart the more plebeian illusion of naive realism, according to which things "are" as they are perceived by us through our senses. This illusion dominates the daily life of men and of animals; it is also the point of departure in all of the sciences, especially of the natural sciences.

These two illusions cannot be overcome independently. The overcoming of naive realism has been relatively simple. In this introduction to his volume, *An Inquiry into Meaning and Truth,* Russell has characterized this process in a marvelously concise fashion:

"We all start from 'naive realism,' i.e., the doctrine that things are what they seem. We think that grass is green, that stones are hard, and that snow is cold. But physics assures us that the greenness of grass, the hardness of stones, and the coldness of snow are not the greenness, hardness, and coldness that we know in our own experience, but something very different. The observer, when he seems to himself to be observing a stone, is really, if physics is to be believed, observing the effects of the stone upon himself. Thus science seems to be at war with itself: when it most means to be objective, it finds itself plunged into subjectivity against its will. Naive realism leads to physics, and physics, if true, shows that naive realism is false. Therefore naive realism, if true, is false; therefore it is false." (pp.14-15).

Apart from their masterful formulation these lines say something which had never previously occurred to me. For, superficially considered, the mode of thought in Berkeley and Hume seems to stand in contrast to the mode of thought in the natural sciences. However, Russell's just cited remark uncovers a connection: if Berkeley relies upon the fact that we do not directly grasp the "things" of the external world through our senses, but that only events causally connected with the presence of "things" reach our sense organs, then this is a consideration which gets its persuasive character from our confidence in the physical mode of thought. For, if one doubts the physical mode of thought in even its most general features, there is no necessity to interpolate between the object and the act of vision anything which separates the object from the subject and makes the "existence of the object" problematical.

It was, however, the very same physical mode of thought and its practical successes which have shaken the confidence in the possibility of understanding things and their relations by means of purely speculative thought. Gradually the conviction gained recognition that all knowledge about things is exclusively a working-over of the raw material furnished by the senses. In this general (and intentionally somewhat vaguely stated) form this sentence is probably today commonly accepted. But this conviction does not rest on the supposition that anyone has actually proved the impossibility of gaining knowledge of re-

*Somewhat condensed remarks on Bertrand Russell's theory of knowledge from *The Philosophy of Bertrand Russell,* Vol. V of *The Library of Living Philosophers,* trans. and ed. by Paul Arthur Schilpp, Tudor Pub., 1944, pp. 278-291. Einstein's passage in admiration of Russell, and the relation of this piece to Russell's thinking will be found in the original and are well worth reference back.

ality by means of pure speculation, but rather upon the fact that the empirical (in the above-mentioned sense) procedure alone has shown its capacity to be the source of knowledge. Galileo and Hume first upheld this principle with full clarity and decisiveness.

Hume saw that concepts which we must regard as essential, such as, for example, causal connection, cannot be gained from material given to us by the senses. This insight led him to a skeptical attitude as concerns knowledge of any kind . . .

MAN has an intense desire for assured knowledge. That is why Hume's clear message seemed crushing; the sensory raw material, the only source of our knowledge, through habit may lead us to belief and speculation but not to the knowledge and still less to the understanding of lawful relations. Then Kant took the stage with an idea which, though certainly untenable in the form in which he put it, signified a step towards the solution of Hume's dilemma: whatever in knowledge is of empirical origin is never certain (Hume). If, therefore, we have definitely assured knowledge, it must be grounded in reason itself. This is held to be the case, for example, in the propositions of geometry and in the principle of causality. These and certain other types of knowledge are, so to speak, a part of the implements of thinking and therefore do not previously have to be gained from sense data (i.e., they are *a priori* knowledge). Today everyone knows, of course, that the mentioned concepts contain nothing of the certainty, of the inherent necessity, which Kant had attributed to them. The following, however, appears to me to be correct in Kant's statement of the problem: in thinking we use, with a certain "right," concepts to which there is no access from the materials of sensory experience, if the situation is viewed from the logical point of view.

As a matter of fact, I am convinced that even much more is to be asserted: the concepts which arise in our thought and in our linguistic expressions are all—when viewed logically—the free creations of thought which cannot inductively be gained from sense experiences. This is not so easily noticed only because we have the habit of combining certain concepts and conceptual relations (propositions) so definitely with certain sense experiences that we do not become conscious of the gulf—logically unbridgeable—which separates the world of sensory experiences from the world of concepts and propositions. . .

It was thus that the fateful conception—fateful, that is to say, for an understanding of the here-existing conditions—could arise, according to which the concepts originate from experience by way of "abstraction," i.e., through omission of a part of its content. I want to indicate now why this conception appears to me to be so fateful.

As soon as one is at home in Hume's critique one is easily led to believe that all those concepts and propositions which cannot be deduced from the sensory raw material are, on account of their "metaphysical" character, to be removed from thinking. For all thought acquires material content only through its relationship with that sensory material. This latter proposition I take to be entirely true; but I hold the prescription for thinking which is grounded on this proposition to be false. For this claim—if only carried through consistently—absolutely excludes thinking of any kind as "metaphysical."

IN order that thinking might not degenerate into "metaphysics," or into empty talk, it is only necessary that enough propositions of the conceptual system be firmly enough connected with sensory experiences and that the conceptual system, in view of its task of ordering and surveying sense experience, should show as much unity and parsimony as possible. Beyond that, however, the "system" is (as regards logic) a free play with symbols according to (logically) arbitrarily given rules of the game. All this applies as much (and in the same manner) to the thinking in daily life as to the more consciously and systematically constructed thinking in the sciences.

It will now be clear what is meant if I make the following statement: by his clear critique Hume did not only advance philosophy in a decisive way but also—though through no fault of his—created a danger for philosophy in that, following his critique, a fateful "fear of metaphysics" arose which has come to be a malady of contemporary empiricistic philosophizing . . .

No matter how much one may admire the acute analysis which Russell has given us in this latest book on *Meaning and Truth*, it still seems to me that even there the spector of the metaphysical fear has caused some damage. For this fear seems to me, for example, to be the cause for conceiving of the "thing" as a "bundle of qualities," such that the "qualities" are to be taken from the sensory raw material. Now the fact that two things are said to be one and the same thing, if they coincide in all qualities, forces one to consider the geometrical relations between things as belonging to their qualities. (Otherwise one is forced to look upon the Eiffel Tower in Paris and a New York skyscraper as "the same thing.")* However, I see no "metaphysical" danger in taking the thing (the object in the sense of physics) as an independent concept into the system together with the proper spatio-temporal structure.

In view of these endeavors I am particularly pleased to note that, in the last chapter of the book, it finally turns out that one can, after all, not get along without "metaphysics." The only thing to which I take exception there is the bad intellectual conscience which shines through between the lines.

*Compare Russell's *An Inquiry into Meaning and Truth*, 119-120, chapter on "Proper Names."

EXPERIMENTS IN INTEGRATED EDUCATION:

A Further Review of the Teaching of Chemistry

IN Vol. 12, No. 3 of MAIN CURRENTS (January 1956) we reviewed several integrative methods of teaching chemistry in high school and college and indicated similar efforts in the teaching of physics.

We have since received an outline of first seminar materials for a course in high school physics from Mr. Robert M. Rippey, chairman of the division of science and mathematics in a new high school in Evergreen Park, Illinois.

Mr. Rippey says, "It is my firm belief that the laboratory must not only be a place where the student discovers certain basic relationships between phenomena under study, but also a place where he learns sound methodology and clear expression . . . I hope that these materials will increase the student's self-reliance and zest for discovery . . . that individual difference will be accounted for and the pressure to fill in a maximum number of blanks in minimum amount of time will be eliminated."

The laboratory outline (dittographed) of the work for the first semester takes the student through the elementary experiments pertaining to the classical basic laws of physics. From the outline, frankly, it is difficult to appraise the uniqueness of the laboratory work. What we do like, however, are such statements as this which occurs in suggestions to the students: "Leave room to add to these definitions (of new words) since, as your understanding increases, many words will take on new meaning. For example, you probably have some idea of what energy is now. Nevertheless, when you finish the course, your definition of energy will no doubt be considerably more complete than the one you might write today."

The students are assured that their marks will be determined as much by . . . "your methods of solving the problems assigned and your attitudes as . . . with your ultimate results." This is supplemented by a statement which indicates the instructor's intention to get away from the usual "cook book" laboratory course: "The way to success in the laboratory is to know what you intend to do before you start to do it. Planning is an important skill which you must learn. Proper planning includes not only knowing what to do but also having a good idea of what you intend to do with the results of your activity . . . You should get in the habit of writing down key ideas in a notebook."

We consider it of value (in this day when many people are so concerned with "scientific facts" and the "truth" of that which science says) for the student to be told early in this outline that: "A famous scientist once said that although the experimenter never could prove absolutely that he was right, he still could always tell how far wrong he was. In many cases this is just as good as being right. Instruments are always subject to errors as are the men who read the instruments . . ." With this, the students are introduced to personal, instrumental, accidental, and systematic errors, and to deviation. The section closes with this statement: "As long as the errors are lower than one might find if a theory were definitely in error, one can say that he proved a theory experimentally. However, *any error at all often contains the seeds of new discovery.*"

IN a somewhat different context, Dr. James S. Perlman, formerly of the University of Minnesota and now at San Francisco State College, has done considerable research in the development of integrated science courses for general education. Of his several papers on this subject, two in particular are worthy of wider attention. These are "Integration in College Courses in Science for General Education" (*Science Education,* March 1951, Vol. 35, No. 2) and "Scientific Thinking: A Basis of Organization for Physical Science Laboratory Programs in College General Education" (*Science Education,* October 1955, Vol. 39, No. 4).

Dr. Perlman aims at ". . . teaching science for the direct transfer of training of scientific attitudes and methods to all aspects of life and its problems . . . Integrated courses [such as he proposes] afford possibilities for such conscious transfer of training. These possibilities lie in determining what there is in common in all sciences, natural as well as social, to enable transfer." One such proposed course is integrated about the concept of the "Universality of Change." Another, which is outlined in detail in the first paper, is an integrated twelve-week unit on the human body. This unit, while elementary in this condensed outline, is an excellent example of the vast amount of related material which can be explored while concentrating upon a set of concepts or a theme.

The second paper to which we refer outlines quite fully procedure and content organization employed in a study of the relative merits of the Conant case-history method emphasizing the "strategy and tactics of science" historically in the solution of scientific problems in contrast with the use of contemporary problem-solving methods in science.

The results of these experimental courses indicate that improvement in skill in scientific thinking can be achieved by both methods, but the author appeals for further tests. It is our hope that wider experimentation in methods such as these will be undertaken immediately.

—*Harvey Culp*

The Interrelation of Religion and Psychiatry

IN the November 1955 issue of the *Bulletin of the Menninger Clinic* three related articles appear: one, "Landmarks in the Relations of Psychiatry and Religion," by Robert A. Preston, the second, "Assumptions of Religion and Psychiatry," by Ian Stevenson, and the third, "Scientific Facts, Religious Values, and the Psychoanalytic Experience," by Frederick J. Hacker.

Mr. Preston, who is Dean of Students at Bethany College, surveys some of the distinctive relationships between the two fields. In tracing a scheme which proceeds from the more distant relations to the more intimate, he first discusses the contribution William James made by (1) negating the criticism that religious beliefs held by neurotics are therefore invalid, (2) leading the way in approaching the psychological aspects of religion through study of personal experiences, and (3) paying special attention to the more extreme forms of crisis experience which throw into bolder relief some of the basic problems.

In discussing Freud and his relation to Pfister, the point is made that although Pfister is Freud's disciple, he remains a devout Christain. Mr. Preston concludes that the "total impact of the work of Freud, Jung, Rank, Reik, Pfister, Money-Kyrle, and many others, amounts to nothing less than a powerful insistence that psychiatric thought is incomplete without a knowledge of man's religious life, and religious thought is incomplete without a knowledge of man's dynamic processes."

It is common practice now to teach psychiatry in theological seminaries, and lately there has been some reciprocity in acquainting psychiatrists with religious principles. Many conferences and workships have been held for the purpose of allowing members of the clergy and psychiatrists to integrate their knowledge and to concentrate on specific problems, and out of them have come such works as Liebman's *Psychiatry and Religion,* and *Christianity and Psychoanalysis,* a group effort.

Among recent developments, well known are the agencies of Marble Collegiate Church in New York City, where Dr. Blanton and the Rev. Peale conduct the American Foundation of Religion and Psychiatry which combines treatment, teaching, and cooperation with many kindred efforts, and the National Academy of Religion and Mental Health, with offices at the New York Academy of Medicine. There has been a great increase in the number of chaplains in mental hospitals, and it is stated that when the psychiatrist and the clergyman carefully study the same people, discussing their needs and the steps necessary to help them, mutual understanding tends to prevail.

Dr. Stevenson, of the Dept. of Neuropsychiatry, Louisiana State University School of Medicine, states that in order to compare the two disciplines, religion and psychiatry, one must use the basic assumptions of each. Religion, in its true essence, is based on experience, such as methods described in the *Cloud of Unknowing,* the *Bhagavad-Gita,* the *Imitation of Christ* and the *Gospel of Sri Ramakrishna.* It has been noticed through the ages that man is capable of changing himself by following certain "rules" which are the same in all religions which have to do with personal experience. Psychiatry also has to do with changing the individual, but is based on the premise that it takes another (a therapist) to bring about that change. After discussing the relative merits of different schools of psychiatry, including self-analysis, Dr. Stevenson suggests that psychiatry can learn a great deal from true religion by going through an inner experience which will bring the significant change desired in the individual. This change, like religion, may be effected by the belief that each man has a center of Godhead of tender love within him, and by the use of techniques which promote that love whether these make the patient more or less adaptive to the culture in which he lives.

Dr. Frederick J. Hacker, who directs the Hacker Foundation in Beverly Hills, discusses the invalid assumptions of the Neo-Thomistic dichotomy between religion and psychiatry. He further states that these values overlap and actually become one. Psychoanalysis has demonstrated the existence and the continuous working of unconscious and semi-conscious processes in addition to, and not independent of, consciousness. From this there has been gathered a large body of knowledge and developmental steps. Modern psychiatry dropped the pejorative undertone of its original description of unconscious and irrational elements as it discovered that not only pathology, but the highest achievements of art, religion, human morality and expressiveness are to a large extent based on unconscious and irrational factors.

The distinction between reason and emotion designates hypothetical abstract poles of human experience possibilities rather than distinct entities. To "purge" one or the other leads not to purification but to pathology. One of the tasks of modern psychiatry is to unmask the error of facile simplicity and find the connections between religion and psychiatry which are seemingly unrelated and separate. These are the nature of man, the structure of his thoughts and emotions governing the function of his outer and inner world, and the interrelation of reason and belief. It throws new light on the age-old controversy of faith vs. proof, and suggests solutions. Modern psychiatry includes identity of interest with religion and philosophy. To be a good psychiatrist, a man

must be a philosopher and theologian, as the religionist must become a good psychologist to fulfill his obligation to his calling. Psychiatry and enlightenment have unmasked some seemingly eternal truths as illusions.

Dr. Hacker believes psychiatry can prove that excessive and extreme suppression or repression of instinctual impulses leads to distortion. Active participation and a certain type of knowledge about oneself and others are dependent on full participation. Love, in this context, is an important tool of perception.

The author discusses the similarity of psychoanalytic self-search to religious phenomena. St. Augustine's advice for finding God or truth, "Go within yourself for in the innermost depths of man lies truth," could be the motto of psychoanalysis. Through inner search and utter consciousness man arrives at knowledge of self-transcendence and knowledge of God. The author asks if it still can be maintained that these two disciplines operate in two distinct areas.

The modern psychoanalytic explanation that the ego or superego is preformed as a possibility present but not manifested from the beginning only shows the lack of any plausible explanation. Psychological research proves that growing is a two-way process—environment makes us, but we also make our environment.

The conclusion is that these two disciplines are interrelated, and that the curricula for each should include much of both.

—Nancy Bullock

Physiological Effects of Atmospheric Ionization

ANOTHER piece in the jigsaw puzzle of the complete human being in relation to his environment is pointed up in a review of research on the influence of atmospheric ionization on the growth and health of animals and humans, by W. Wesley Hicks, in the February 1956 issue of the *Journal of the Franklin Institute*.

A certain proportion of the molecules of the air we breathe normally become electrically charged (ionized) by one means or another, but the proportion and the ratio of positive ions to negative ions, are highly variable. They are affected by the weather, by air pollution, and by a number of other factors, not all known. Mr. Hicks is president of an electric heater company, and electric heaters come into this because at their usual operating temperatures they are found to generate ions, and more positive ions than negative. An excess of positive ions in the air appears to induce discomfort, fatigue, headaches, dizziness, nausea, and faintness, while negative ions appear to induce a feeling of well-being and to be therapeutically beneficial in illnesses such as asthma, hay fever, sinusitis, and hypertension. Naturally Mr. Hicks is interested in innovations to overcome or compensate for the tendency of heater elements to generate positive ions, and he mentions some methods that have been tried. The most successful one involves a small amount of the radioactive element polonium. He cites physiological research done on chickens, rats, mice, hamsters, and humans which indirectly confirms or supports the observed therapeutic effects. Significant correlations have been found between the negative ion density and such factors as the rate of growth and physical activity of chickens, rats and mice, the carbon dioxide combining power of plasma and the blood pH in hamsters, the inhibition of growth of transplanted tumors in rats and mice, the activity of the pituitary-adrenal system of rats. On the other hand cucumbers were found to flourish under positive ionization. Altogether, thirty-seven references are cited on the subject. The evidence points to a definite influence of the electrical condition of the atmosphere on life processes.

Unfortunately the author makes no mention of the possible effects, perhaps interrelated, of potential gradients and ion currents in the atmosphere. These may be found discussed, though without reference to physiological effects, in a review article entitled "Atmospheric Electricity," by J. Alan Chalmers, in the book *Reports on Progress in Physics,* Vol. 17 (1954) published by the Physical Society (London).

—Ray W. Jackson

Progress of Relativity Theory

RELATIVITY is getting to be an old subject, fifty years old, in fact, but it is such a subject that even now every little bit of explanation is welcomed by workers in other fields. A concise and clear review of "Fifty Years of Relativity" is given by Prof. Peter G. Bergmann in *Science,* 23 March, 1956. Prof. Bergmann reviews the growth of the "special theory" out of the mechanics of Newton and the electromagnetic theory of Maxwell and Lorentz, the challenge of greater generalization to include gravitational forces (the "general theory") and quantum mechanics, culminating in Einstein's and other contemporary attempts at "unified field theories." All this is by way of leading up to a report on the Semicentennial Jubilee Conference at Berne in July, 1955, a symposium of relativity theorists held to honor the fiftieth anniversary of Einstein's first paper on relativity, published while he was working for the Swiss Federal Patent Office in Berne in 1905. Prof. Bergmann sums up the present situation in the following words: "The foundations of the special and the general theory of relativity may be considered as generally accepted, the experimental confirmations conclusive for the special theory, and more and more convincing for the general theory. The special theory forms by now an integral part of physics as a whole and is used in every-

day work in atomic and nuclear physics. The general theory of relativity for many years appeared to have its applications principally in cosmology and cosmogony, themselves fields as yet in a highly unsettled state. But recently general relativity is also being considered in connection with questions affecting microphysics. Its relationship to quantum theory is still highly problematical. But the quantum theory of the atomic nucleus and of elementary particles is not in such a satisfactory state that it can afford to disregard possible assistance from whatever source. General relativity offers us a new approach to the ultimate properties of space and time, and these may bear on the physics of the very small as much as we know they do on the physics of the very large. Many of our present efforts are still in a very early stage. The very fact that interest in general relativity has recently increased throughout the world is indicative of the fact that its implications have not yet been fully worked out and exploited for our understanding of the physical universe as an organic whole."

—Ray W. Jackson

Querying the Cell

DR. Daniel Mazia, Department of Zoology at the University of California, presents an excellent review of "The Life History of the Cell" in the Winter issue of the *American Scientist* (pp. 1-32, January, 1956).

The author asks, "What do we wish to know?" He suggests that the object is "to define as exactly as possible the events in the cell that characterize a given phase of the life history and especially to discover the events that drive the cell through time, from one phase of its history to the next."

Dr. Mazia proposes that the mysteries surrounding the processes of living cells can best be dispelled "by the simple procedure of asking the cell questions about its life history and by avoiding the intrusion of our own notions as to how the cell ought to perform. Such an experimental philosophy—for to ask a question can only mean to design an experiment—has at least this merit; that if the cell refuses to answer the question, the chances are that it was not an intelligent question. Thus while we inevitably influence the type of generalization that we obtain, the cell tells us when we are on a fruitless track."

Problems involved in carrying out the experiments necessary to answer the many questions about cells were surmounted in many ingenious ways, which anyone with even a modest background in biology will find most interesting. Dr. Mazia summarizes the results as follows: (1) when a cell divides, the daughter cells are normally about the same weight, (2) following division, each cell begins to grow at a maximum rate without delay, (3) the rate of growth slows down and comes to a halt when the mass of the amoeba has doubled, (4) there is no appreciable growth during division, and (5) there is a lapse of time between completion of the growth in mass and the onset of division (in the amoeba this period is about four hours of a twenty-four cycle).

In a discussion of the limitation of growth, the author reminds us that it is not as simple as merely a doubling of the units within a cell that determines when it stops growing. When a cell is forced to divide unequally, the smaller cell continues to grow until it reaches the size of the mother cell, and the larger cell does not double in size. Therefore, it would seem that the size of the cells are under genetic control.

When a cell has reached full size, what makes it divide? The author discusses the triggering of division, the theories biologists have accepted, and emphasizes the vast amount of information that is still not available on this subject. However, he shows how the cells' behavior indicates that there is "a time in the life history of the cell just before division—when the decision has been made irrevocably. A trigger has been pulled."

In his summary, the author explains that he has tried "not only to present facts and theories, but also to convey some of the pleasure and excitement of the research experience itself." He has succeeded most admirably. If I were not now a biologist, I should want to become one. The following quotations give an excellent taste of his philosophy.

". . . I have tended to limit myself to the description of work with which I have had direct experience. Unfortunately, it is more difficult in scientific discourse to portray justly the complex network of our dependence on the past, on the work of our contemporaries, and on sciences that seem far from our own. If I could do so, I think that I could convince you that the trend toward specialization is by no means the only current in modern science, that the modern study of the cell represents the very opposite of such a trend.

"Since I have dealt with a cyclical process, the life history of the cell, it is only appropriate that I end where I began. It is clear that the cell moves through time according to a pattern that begins to be identifiable, that the cell at one phase of its life may have quite different interests from a cell at another phase. To some extent we can identify these interests and can inquire into the events that drive the cell through time, from one phase to the next. In my opinion, we can best do so by the device of asking the cell questions, which is very different from the too humble descriptive approach to things and from the more arrogant device of imposing hypotheses based on our notions of how the cell solves its problems as a scientist would. In the approach that I have tried to describe, we draw on the physical sciences as much as possible for the simple reason that we are dealing with problems of the behavior of matter and matter understands best the language of measurement. Indeed, if we have answered any of the persistent questions about the cell, it is because we now have means of measurement and observation that were not avail-

able to the men who first asked these questions. Nevertheless, while observing the cell with the extensions of our senses that physics and chemistry provide us, we have been less interested in mechanisms (which may be our ultimate interest) than in the rules the cell seems to obey.

"But my main point—and in making it I think I am describing a strong current in biological research—has been that we are no longer satisfied with a good measurement or a good observation or a clever elucidation of some mechanism in the cell unless we can locate it on a time axis, and the time I refer to is not our time, but the time of the cell itself, as expressed in its life history."

—*Ruth Lofgren*

NEWS AND NOTES

IN the piece, *Towards Faith in Reason,* (page 109) an effort has been made to provide a series of notes (marginally arranged) of those considerations which show (1) that a type of educational research urgently needs doing, and (2) that since the methodology for such research is now clearly known, it could be done.

In this same issue, we include a remarkable brief analysis, by Albert Einstein, of a state of affairs connected with a modern faith in reason. It would be hard to find a more succinct review of the real nature of the revolution in science which has restored the role of the human reason to its proper high place. Coming as this does from Einstein himself, it may be regarded as the best possible point of departure for anyone who cares about the achievement of a consensus by free men the world over.

IN May 23, 1956, the people of lands historical in Buddhism—roughly half the population of the earth—will begin the celebration of the 2500th anniversary of the birth of the Founder of that faith. To observe this event vast preparations have been made. A convocation of monks from India, Ceylon, Burma, Thailand, Laos, Cambodia and other lands met in Burma for two years. They authorized the publication in English of the entire body of the Buddhist canon. The work, under the direction of G. P. Malalasekera in Ceylon, will take about five years to complete. Observances of the Jayanti (spiritual victory) will go on for a year, special occasions being noted, in Sanchi, Buddha Gaya, and elsewhere.

As a contribution to an understanding of Buddhism we present in this issue the words of U Nu, Prime Minister of Burma. The reader will note the realism of the teachings. They provide not only moral guidance, but prescribe actual psychological practices, and are thus empirical prescriptions, not mere beliefs.

Behind them is also theory. After all, Gautama Buddha was an Indian embodying and purifying the Vedic-Puranic teachings. In these ancient works evolution, for example, is clearly described, particularly in the *Puranas,* preeminently in the *Vishnu Purana.* Into these works Gautama was incorporated as an evolutionary triumph.

The sequence of physical forms selected as particularly significant embodiments of the evolutionary purpose—*avatars,* or incarnations of God—are the fish (Matsya), the tortoise (Kurma), the boar (Varaha), the lion-man (Narasimha), the dwarf (Vamana), man in his strength of body (Parasurama), ideal man, strong in mind (Ramachandra), spiritual man (the elder Sri Krishna), the precursor of man wholly liberated (Gautama Buddha). Provision is made for Buddhas to be, typified by the last, the Kalki Vatara. (One notices that the biological sequence, fish, amphibian, transition to man, infant mankind, and so to higher men, is precisely that established by western science.)

The teachings to which our author, U Nu, refers are therefore to be taken as descriptive of inevitable and inescapable stages of development in the future of the race. The whole emphasis in Gautama Buddha's teaching is, therefore, scientific in the sense above noticed. The Noble Eightfold Path is not an arbitrary moral prescription, but an analysis of the steps of spiritual evolution inevitable because they are natural, arising from the human situation.

The foregoing facts about Vedic and Buddhist views are to be born in mind. They are expressions of realism. The force of these ideas is now being felt in the world, and ever more powerful deliverance of these rational-spiritual ideas may be expected, as time goes on and the East asserts its true self.

—*F. L. K.*

REVIEWS

Closing the Gap Between Psychiatry and Religion

IN his short book, *Integration of Religion and Psychiatry* (Macmillan Co., New York, 161 pp., $3.75), Dr. W. Earl Biddle makes a commendable attempt to show the harmony between psychiatry and religion. He early makes the point that "Despite apparent conflict and misunderstanding, there can be no fundamental incompatibility between true psychiatry and true religion. Both are concerned with the same object, the psyche or soul. Both deal with the study of the nature of man, the purpose of his existence, the fulfillment of his destiny . . . Both aim to relieve frustrations, fears, and anxieties and to help men to live in peace."

Dr. Biddle places the responsibility for the materialistic trend in modern psychiatry upon Freud, who "used his discoveries to attack the dogma of organized religion . . . Others have taken up the weapons he forged and have carried the attacks far beyond his expectations," but intrinsically "the conflict is not between science and theology, but between individuals who are unable to understand one another."

Perhaps Dr. Biddle's most unique personal contribution lies in the concepts of the phantastic good parent and the phantastic bad parent. (Since other psychiatrists make no similar distinction between "phantasy" and "fantasy," it would have been better had this been dealt with more clearly and extensively than in a mere footnote.) "The small child under age three views his parents and other adults as gigantic, all-powerful people . . . In the child's mind the parents have the power to gratify every wish, or to annihilate him. But according to the logic of the child, a good person cannot do anything bad, and a bad person can do no good . . . The child does not regard the gratifying father and the frustrating father as the same person . . . Besides being real people the parents represent phantastic, illusory, or imaginary persons. The small child, then, has, in addition to his real parents, a phantastic father and mother who are preposterously good, and a phantastic father and mother who are preposterously bad."

This concept is applied throughout the book to many of the problems confronted by child and adult. Under the subject of "Ideals of Service," Dr. Biddle says that "whenever something is done in the spirit of service, we are symbolically constructing and improving the phantastic father and mother and strengthening good phantasies. When something is done because we "have to" do it, we are merely protecting ourselves from the attack by the phantastic parents as we feel that we will otherwise be overwhelmed or annihilated by them. We must perform the act or be punished." The author thinks that it may sometimes be necessary for a clergyman to instill fear if a positive approach has no appeal. "However, hell-fire and damnation sermons can be very terrifying and emotionally traumatic, especially to children and sensitive persons . . . A wholesome religion does not initiate guilt, but to the contrary helps to expiate it."

In his chapter on "Virtue and Mental Health," Dr. Biddle decries the fact that "according to present-day standards of the world at large, virtue has become a fault. Its meaning is associated with prudery. Holiness is regarded as evidence of weakness . . . Yet the ostensible purpose of religious education is to help men to be good and holy—to make them *whole*. This is also the aim of mental hygiene."

Further along in the same chapter, the author mentions in passing one of the little understood aspects of therapy. A good therapist does not tell his patient what to do. "Often the person in trouble can see the solution intelligently, but emotional factors make it difficult for him to reach a decision . . . The wise counselor must assure the client that he has *faith* in him; supplies needed information, helps the client to evaluate all aspects of his problem and talk it out, but allows him to draw his own conclusions. The sincere person who seeks help will make the right decisions if he is trusted and permitted to weigh his problem carefully. The person who insists upon being told what to do is merely seeking someone upon whom he can place the burden of responsibility for the consequences of his acts . . . The presumptuous adviser lays himself open to blame for all of the difficulties which arise from the decisions which are made."

Perhaps some people do not realize that one of the goals of therapy is to help the patient to learn to love more fully and more maturely. Psychiatrists often use a somewhat technical phrase, the ability of the person to relate to others, to discuss with one another what might be called love by those not trained in psychiatry. Dr. Biddle stresses that the word "charity" in its original usage in the Bible "meant Christian love of God and one's fellow men" rather than a mere giving of alms to the poor. "Man becomes most godlike through his ability to love . . . Freud's theories have added to the confusion of modern man by reducing love to nothing but a desire for sexual intercourse . . . People accepting Freud's theories became afraid to love anyone but a marital partner . . . Social stability can be restored by reviving the concept of charity in its pristine significance—the Christian love of God and man."

It seems somewhat unfortunate that Dr. Biddle restricts his religious concepts to Christianity. He might have found other and greater areas of harmony and integration between religion and psychiatry if he had broadened his approach by dealing with concepts from other religions. This is not to imply, however, that Dr. Biddle is narrow or intolerant in his approach. On the contrary, he shows particularly good insight and tolerance in his last chapter on "Religion and Social Integration," in which he discusses the concept of the One World. "Every man dreams of One World where there is peace and harmony . . . But the dreams of one person differ from those of another. In seeking the attainment of this dream, people must try to change one another through a process of mutual education. When men become impatient with the slowness of the educational process, they are inclined to resort to *force* of one type or another . . . Forced compliance with change is always obnoxious and oppressive even though the change may be initiated with humanitarian motives . . . No one can be forced to be religious-minded. The greatest problem of the clergy is to convince people that cultural religion can offer them something which they need."

—*Wm. M. Nicholson*

History as a Biography of the Human Spirit

IN the midst of the war years (1943), a book appeared which deserved more than the immediate notice it received. This situation has now been corrected with the issuance of a revised edition of *Man the Measure,* by Erich Kahler (George Braziller, Inc., N. Y., 1956, 671 pp., Bibliog. and notes, index, $5.00).

Subtitled "A New Approach to History," the book ". . . is an attempt to write history as the biography of man and from it to gain a view of the future of man." In justification of this approach, the author states: "The great crisis that began in the nineteenth century, and came to a head in the twentieth century, has undermined the concept of mankind as a coherent body, together with the concept of history as the consistent evolution of mankind. Both the coherence of mankind and the consistency, indeed the fact, of historical evolution have been challenged, and so for the first time they have become the focus of conscious attention. This challenge confronts us with the fundamental question on which the destiny of our civilization hinges: Is there a human quality common to men and distinguishing man from the animal? Does history give evidence of the evolution of this human quality? It is the necessity to find an answer to these questions that makes man, for the first time, the specific and explicit subject of history."

This book is closely packed and of tremendous range. Einstein said of it: "This is the work of a man who has searched passionately for the reasons of the breakdown of values and ways of life which we are witnessing. I will not feel that I have finished this book before I have pondered every line in it."

At this season, one's thoughts turn to summer reading. Your reviewer, in this spirit, assigns *Man the Measure* as a perfect instrument for lengthening your "long, long thoughts." Its essential worth may be demonstrated by these few following quotes: "The concept of man made in the image of God is, inversely, the concept of God as the perfiguration and ideal of man. Those who today have a true faith in God still tread a human path. But in all others—and there are many—whose faith in God has lost its vitality, the human faculty of transcending will go on turning to inhuman ends and leading to disaster until there grows upon them a faith in the idea of man in a pure and unveiled form, a Religio Humana.

"Here the sciences must play an enormous part. In our age, a faith that includes the whole of man cannot be enlightened, cannot exclude man's immensely developed rational faculties. Man cannot fall back into the irrational, he can only proceed to the super-rational. This means that man's belief in the idea of himself can only live if it is substantiated by the body of knowledge created in the course of centuries, it can be comprehensive only insofar as knowledge becomes comprehensive. Man masters his world and his development when he masters his knowledge, commands a picture of his known world. In fact, knowledge becomes knowledge only when scattered single experiences are integrated in a coherent whole.

". . . Man has come of age . . . and his coming of age is an irrevocable fact, no matter how immature he may be for the task of directing himself. The directive no longer comes only from above, it comes from below, not only from the Creator, but from a creation, from conditions man has produced, without knowing it or wishing it, in his mad chase for earthly goods. But men disregard the commands of their creation just as they have disregarded the commandments of their Creator. In today's technological situation is hidden the same human significance that was revealed by the Word of God, only that today, the idea is no longer separate from matter. It is deeply and secretly incorporated in matter and so, for the first time, it may have the prospect of materializing."

—Harvey W. Culp

The Ideas Behind the Reforms

THE *Age of Reform,* by Richard Hofstadter (Alfred A. Knopf, N. Y., 1955, 328 pp., Index, $5.00) covers an era in America "From Bryan to F.D.R.," and is an excellent discussion of "Populism, Progressivism, and the New Deal" from the perspective of our own time. It has just been awarded a Pulitzer Prize. This covers the period from 1890 to the 1940's, which can well be designated as an era whose ruling passions were progress and reform.

The author assures us that he not been inspired ". . . by a desire to retell the familiar story of the primary movements of reform in the United States since 1890, but by the need for a new analysis." In his introduction, he prepares the reader by telling him that the theme of the book shall be ". . . the ideas of the participants—their conception of what was wrong, the changes they sought, and the techniques they thought desirable . . ."

Even today most of us have some sort of a Currier and Ives picture in our minds which serves as the symbol of what we mean by "farmer"—a sort of icon to the agrarian myth which Hofstadter shows was an unrealistic concept even very early in the 19th century. But it was the conceptual myth in conflict with commercial realities which generated the emotional energy of the populist movement.

Progressivism developed its head of steam largely as a result of the continuing energies of the agrarian and populist revolt which were now channelized by yet another conceptual shift or conflict. The author calls this the "status revolution." In these conflicts, broken dreams and losses of security Hofstadter finds something to nourish the growth of isolationism, various hatreds and phobias.

His analysis of the role of Woodrow Wilson produces this conclusion as to the reasons for his failure to lead America into a role of world leadership: "The vein of idealism he was trying to mine was there; but the demands he made upon it assumed that it would be inexhaustible, and his effort to give to the idealism of America an internationalist form reckoned without the fact that his country was not, even in the remotest sense, a country with an internationalist outlook." It is this sort of focussing upon concept, myth, and consensus that makes this book very worth one's while, particularly as an aid to intelligent appraisal of the "issues" which will be presented to us in this election year.

—Harvey W. Culp